

island where the soil is hard and gravelly. It was noted by Blankenship and Ornduff but missed in 1968.

\**Vulpia myuros* (L.) K. C. Gmelin var. *hirsuta* Hack. (*Festuca megalura* Nutt.) In 1975 many patches of this grass were found near the lighthouse on Lighthouse Hill. This is a new species to the islands.

Some species such as *Psilocarphus tenellus* and *Sagina occidentalis*, reported by both Blankenship and Ornduff, were probably present but overlooked in 1968. *Cerastium viscosum*, *Malva parviflora* and *Medicago hispida* were recorded by Blankenship but not by Ornduff or by Coulter in 1968. In 1892 these plants may have persisted in fenced gardens, protected from rabbit grazing, as suggested by Ornduff. The gardens have since been abandoned. Between 1972 and 1975 the Point Reyes Bird Observatory carried on a program to eliminate the rabbits, which were finally completely eliminated in 1975. With the reduction in the rabbit population these plants may have been able to recolonize the islands; or, perhaps, these species persisted as repressed populations, expanding with the reduction in rabbit numbers.

The location where some new species were first recorded suggests the ways in which these plants came to the islands. *Anagallis arvensis* forma *caerulea*, *Leontodon leysseri*, and *Polycarpon tetraphyllum*, found along the tram tracks where there is much human activity were likely brought by man. *Bromus maritima*, *Montia hallii*, and *Vulpia myuros* were found near the top of Lighthouse Hill where most migrant passerine birds first land on the islands. These plants may have been transported by passerines. Finally, *Rumex crispus*, found in the gull colony, may have been brought by gulls, which fly between the islands and the mainland.

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This is contribution number 151 of the Point Reyes Bird Observatory. — MALCOLM C. COULTER, Department of Biology, University of Pennsylvania, Philadelphia 19104.

## REVIEW

*Manual of the vascular plants of Wyoming.* By ROBERT D. DORN. Illustrations by Jane L. Dorn. 2 vols. 1498 pp. 1977. Garland Publ. Co., New York. ISBN 0-8240-9905-2. \$95.

Wyoming now has a flora! A conspicuous blank spot has been filled in for plant taxonomists, biogeographers, ecologists, resource managers, users of Wyoming's natural resources, and those who appreciate and have the opportunity to enjoy its rich natural beauty.

Many of Wyoming's political leaders and residents are salivatingly eager to exploit its coal, oil, forests, rangelands, wildlife, water soils, scenery, and other operationally non-renewable natural resources. Others wish to apply a conservation ethic, or legal restrictions, to unregulated use. Both groups have had a most useful tool handed to them free, more or less, by an independent, dedicated, skillful scientist.

The manual is excellent. Dorn is a practiced, perceptive, industrious plant collector. He mentions giving himself only three years to do the flora. Thus, some weeds and all infraspecific taxa are not included, distributions are given only within Wyoming and in broad categories, habitat information is minimal. 2144 species are well described. Leading families are *Compositae* (with 17.3% of the species), *Gramineae*

(10.2), *Leguminosae* and *Cruciferae* (5.8 each), *Cyperaceae* (5.5), *Scrophulariaceae* (4.6), *Ranunculaceae* (3.0), *Umbelliferae* (2.6), and *Boraginaceae*, *Caryophyllaceae*, and *Chenopoliaceae* (2.4). Dorn's keys are direct, imaginative, practical for field use, and have been tested (p. 2). Keys to fruiting plants are provided for some groups (*Cruciferae*, *Umbelliferae*, *Astragalus*, *Salix*); vegetative characteristics are often used. Taxa are arranged alphabetically. References are given to recent monographic treatments, and sources of original descriptions are given. Synonymy seems adequate.

Improvements in a new edition might include a less lavish use of paper simply to condense volume and weight. More detailed distributions are desirable, particularly since the Rocky Mountain Herbarium at Laramie has a file of dot maps for Wyoming plants, and many of the species are mapped in Hultén's Alaska flora and his other publications and still others in the monographs Dorn gives as references. Reference should have been made to Wyoming taxonomic work already done. These include Beetle and May's (1971) treatment of the grasses, Beetle's on the section *Tridentatae* of *Artemisia* (1960), Porter's series on families through the *Fumariaceae* (1962–1972), theses, local floras such as Shaw's for Teton County (1976), Despain's for Yellowstone National Park (1975), Nelson's unfortunately unpublished one for the Medicine Bow Mts. (1974). All of these contain valuable information on the flora of Wyoming that Dorn's flora does not.

Some comments can be made on individual taxa. Beetle's treatment of *Artemisia tridentata* and its allies is more perceptive, and an exception could have been made here for including subspecies. *Puccinellia-Glyceria-Torreyochloa* is less confusing if attention is paid to the species' habitats. A few species from Teton County are not included (*Antennaria plantaginifolia*, *Dodecatheon jeffreyi*, *Carex subfusca*).

A condensed appendix supplies some of the accessory information vital for understanding the flora. The map at  $1/5.8 \times 10^6$  could have been at  $1/3 \times 10^6$  and still fit the page but supply more information. A paleobotanical discussion adds to the material on geography, climate and floristic elements given by Porter (1963:6–8). Dorn's floristic discussion adds some interesting ideas but omits some of Porter's details. "Vegetation types" recognizes 47 plant associations that can be seen in the field. It avoids to a large extent both problematic casual explanations and physiognomic groupings. Soils limitations of several species are first mentioned here. Is grassland diversity slighted? Are data on these kinds of vegetation so lacking that no hierarchical arrangement at all is possible? desirable? References here are too selective. Rare and endangered species are listed by counties, and this list is a first for Wyoming. Early collectors are briefly mentioned. A systematic summary lists numbers of genera and species by division, subclass, and families. The glossary and drawings, by Jane L. Dorn, are excellent and very useful. The volumes are fully indexed. Eight pages of Additions conclude the manual.

Dorn's book is a valuable gift to the people of Wyoming and to botanists everywhere. Both groups have needed it. The high cost obviously makes the work less available. Unfortunately no one will benefit from the \$95 price. One must conclude that our present methods of getting floras written, or not written for North America, are wasteful of a valuable resource, namely skilled botanists — their industry, imagination and training. — Jack Major, Botany Department, University of California, Davis 95616.